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Acute Coronary Syndromes

INSULIN DEPENDENT AKT-PHOSPHORYLATION IN THE PORCINE MYOCARDIUM

ACC Moderated Poster Contributions
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Background: Insulin promotes AKT-dependent pro-survival signalling and reduces reperfusion injury and infarct size in the ex vivo rat heart. We aimed to investigate: a) AKT-phosphorylation, b) impact of dose, and c) influence of fasting state on the AKT-response after intracoronary insulin administration in the in vivo pig myocardium.

Methods: Pigs fed 2 hours pre-procedure received 0.1U or 1U of insulin in the LAD, and fasting pigs 0.1U. Left auricle biopsies at baseline and left and right ventricle tissue 15 min post insulin administration were analysed for AKT-phosphorylation by densometric analysis of total AKT and phosphorylated AKT immunoblots expressed as a ratio. Relative AKT-phosphorylation compared to baseline was calculated.

Results: Mean relative AKT-phosphorylation was significantly increased in both fasting and fed animals after insulin infusion: 296.9% in the fasting group (p=0.012), 99.6% in the fed-1U-insulin group (p=0.031) and 56.8% in the fed-100mU group (p=0.005). The difference between fasting and fed groups was borderline significant (p= 0.059) and non-significant between the two fed groups (p=0.908).

Conclusions: Insulin phosphorylates AKT in the porcine myocardium. Feeding, with elevated serum glucose and insulin, attenuate the response, irrespective of insulin dose. The finding may help to explain the inconsistent results from clinical studies using insulin as reperfusion therapy in acute myocardial infarction.